

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6: C12Q 1/68	A3	(11) International Publication Number: WO 97/23650 (43) International Publication Date: 3 July 1997 (03.07.97)
(21) International Application Number: PCT/US96/20202 (22) International Filing Date: 19 December 1996 (19.12.96) (30) Priority Data: 08/577,858 22 December 1995 (22.12.95) US (60) Parent Application or Grant (63) Related by Continuation US 08/577,858 (CIP) Filed on 22 December 1995 (22.12.95) (71) Applicant (for all designated States except US): VISIBLE GENETICS INC. [CA/CA]; 700 Bay Street, Toronto, Ontario M5G 1Z6 (CA). (72) Inventors; and (75) Inventors/Applicants (for US only): STEVENS, John, K. [CA/CA]; 540 Huron Street, Toronto, Ontario M5R 2R7 (CA). DUNN, James, M. [CA/CA]; 117 Citadel Drive, Scarborough, Ontario M1K 4S8 (CA). LEUSHNER, James [CA/CA]; 84 Sylvan Valley Way, North York, Ontario M2M 4M3 (CA). GREEN, Ronald, J. [US/GB]; 24 Lansdowne Place #2, Hove, East Sussex BN3 1HG (GB).		(74) Agents: LARSON, Marina, T. et al.; Oppedahl & Larson, Suite 309, 1992 Commerce Street, Yorktown Heights, NY 10598-4412 (US). (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 21 August 1997 (21.08.97)
(54) Title: METHOD FOR EVALUATION OF POLYMORPHIC GENETIC SEQUENCES, AND THE USE THEREOF IN IDENTIFICATION OF HLA TYPES (57) Abstract The allelic type of a polymorphic genetic locus in a sample is identified by first combining the sample with a sequencing reaction mixture containing a polymerase, nucleoside feedstocks, one type of chain terminating nucleoside and a sequencing primer to form a plurality of oligonucleotide fragments of differing lengths, and then evaluating the length of the oligonucleotide fragments. As in a standard sequencing procedure, the lengths of the fragments indicate the positions of the type of base corresponding to the chain terminating nucleotide in the extended primer. Instead of performing and evaluating four concurrent reactions, one for each type of chain terminating nucleotide, however, the sample is concurrently combined with at most three, and preferably only one, sequencing reaction mixtures containing different types of chain terminating nucleotides. The information obtained from this test is evaluated prior to performing any additional tests on the sample. In many cases, evaluation of the positions of only a single base using one sequencing reaction will allow for allelic typing of the sample.		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 96/20202

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 92 15711 A (UNIV MINNESOTA) 17 September 1992 see claims and examples ---	1-19
X	EP 0 351 138 A (HARVARD COLLEGE) 17 January 1990 see whole document esp. claims ---	1-15
X	PROC. NATL. ACAD. SCI, vol. 74, no. 12, December 1977, pages 5463-5467, XP002033434 SANGER F. ET AL., : "DNA sequencing with chain-terminating inhibitors" see the whole document ---	1-15
X	DE 38 41 565 A (EUROP LAB MOLEKULARBIOLOG) 28 June 1990 see the whole document -----	1,2

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

20 June 1997

Date of mailing of the international search report

07.07.97

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+ 31-70) 340-3016

Authorized officer

Müller, F

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter: nal Application No

PCT/US 96/20202

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9215711 A	17-09-92	US 5578443 A	26-11-96
		CA 2105585 A	07-09-92
		EP 0577708 A	12-01-94
		JP 6505391 T	23-06-94
		US 5629149 A	13-05-97

EP 0351138 A	17-01-90	US 4962020 A	09-10-90
		AT 119579 T	15-03-95
		AU 614245 B	22-08-91
		AU 3798689 A	18-01-90
		CN 1039845 A	21-02-90
		DE 68921515 D	13-04-95
		DE 68921515 T	13-07-95
		JP 2154699 A	14-06-90
		LT 1515 A	26-06-95
		US 5498523 A	12-03-96
		US 5122345 A	16-06-92
		US 5409811 A	25-04-95

DE 3841565 A	28-06-90	US 5124247 A	23-06-92

Form PCT/ISA/210 (patent family annex) (July 1992)